

A Novel Electrostatic/Microstructured Adhesive with Dust Mitigation Capabilities

Completed Technology Project (2016 - 2020)



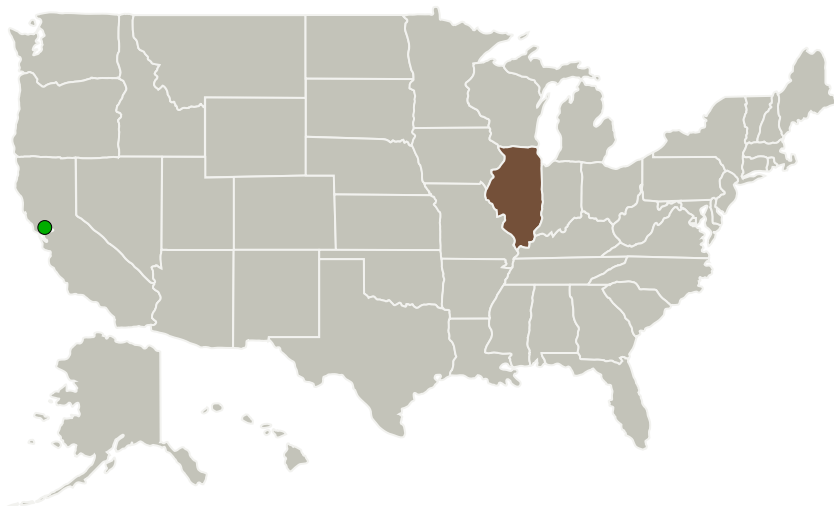
Project Introduction

This work will develop a novel electrostatic/gecko-like adhesive that will demonstrate an order-of-magnitude improvement of electrostatic adhesion pressure coupled with the unique ability to shed dust particles. The increase in adhesion pressure will allow the Astrobees/SPHERES class of free-flying robots to dock or perch on smooth surfaces, rough surfaces, and even fabrics. Furthermore, the dust mitigation capabilities have the potential to transition gecko-like adhesives from laboratory experiments that require frequent cleaning by hand to flight-capable systems.

Anticipated Benefits

The increase in adhesion pressure will allow the Astrobees/SPHERES class of free-flying robots to dock or perch on smooth surfaces, rough surfaces, and even fabrics. Furthermore, the dust mitigation capabilities have the potential to transition gecko-like adhesives from laboratory experiments that require frequent cleaning by hand to flight-capable systems.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Illinois Institute of Technology	Lead Organization	Academia Asian American Native American Pacific Islander (AANAPISI)	Chicago, Illinois
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations

Illinois

Project Website:

<https://www.nasa.gov/strg#.VQb6T0jJzyE>

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Illinois Institute of Technology

Responsible Program:

Space Technology Research Grants

Project Management

Program Director:

Claudia M Meyer

Program Manager:

Hung D Nguyen

Principal Investigator:

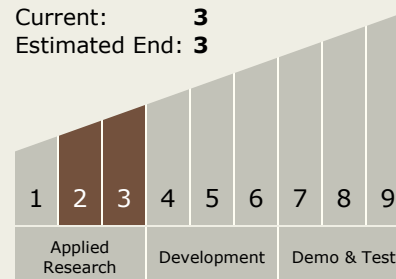
Matthew Spenko

Technology Maturity (TRL)

Start: 2

Current: 3

Estimated End: 3



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Technology Areas

Primary:

- TX07 Exploration Destination Systems
 - └ TX07.2 Mission Infrastructure, Sustainability, and Supportability
 - └ TX07.2.5 Particulate Contamination Prevention and Mitigation

Target Destinations

Earth, The Moon